Characterization of Nanocomposites: Technology and Industrial Applications

LONG BEACH, CALIFORNIA (February 27, 2017) – AlphaSTAR Corporation **(www.alphastarcorp.com)** is pleased to announce the release of a new book published by our Chief Scientist, Dr. Frank Abdi. The book, titled *"Characterization of Nanocomposites: Technology and Industrial Application"* covers the subject of advanced multiscale hybrid materials which are being produced in the industry, studied by universities, and used in several applications. Unlike macromaterials, it is difficult to obtain the physical, mechanical, electrical, and thermal properties of nanomaterials because of the scale. Designers, however, must have knowledge of these properties to perform any finite element analysis or durability and damage tolerance analysis. This is the book that brings this knowledge within easy reach.

What makes this book unique is the fact that its approach combines multiscale multiphysics and statistical analysis with multiscale progressive failure analysis. The combination gives a very powerful tool for minimizing tests, improving accuracy, and understanding the effect of the statistical nature of materials, in addition to the mechanics of advanced multiscale materials, all the way to failure. The book focuses on obtaining valid mechanical properties of nanocomposite materials by accurate prediction and observed physical tests, as well as by evaluation of test anomalies of advanced multiscale nanocomposites containing nanoparticles of different shapes, such as chopped fiber, spherical, and platelet, in polymeric, ceramic, and metallic materials. The prediction capability covers delamination, fracture toughness, impact resistance, conductivity, and fire resistance of nanocomposites. The methodology employs a high-fidelity procedure backed with comparison of predictions with test data for various types of static, fatigue, dynamic, and crack growth problems. Using the proposed approach, a good correlation between the simulation and experimental data is established.

For further information on the topic of characterization of nanocomposites as well as other AlphaSTAR technologies, please visit our website or reach out to the sales contact listed below.

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About AlphaSTAR Corporation: AlphaSTAR Corporation is a leading engineering services and software company that provides innovative physics-based simulation technologies for structural modeling and analysis of advanced composite structures in the aerospace, automotive, defense, and energy industries worldwide. As a solution provider, AlphaSTAR partners with Altair, ANSYS, MSC Software, DS Simulia, and LSTC. AlphaSTAR is headquartered in Long Beach, California and is the recipient of esteemed industry and technology awards for R&D and software development.

About Dr. Frank Abdi: Dr. Frank Abdi is the founder of AlphaSTAR Corporation, renowned aerospace scientist, and distinguished author. For over thirty years he has contributed leadership to solving advanced material challenges including the derivation and modification of theoretical equations, aero-elastic tailoring, optimization, advanced material design, fatigue, creep, fracture mechanics, and structural mechanics. At AlphaSTAR he has assembled a team of scientists and engineers that represent the world's leading repository of advanced material intellectual property and developed proprietary software to maximize the utilization of this vast knowledge base to provide computerized virtual testing capabilities.

Sales Contact:
Arshi Sagati
 (562) 961-7827 ext. 158
asagati@alphastarcorp.com